



Source Water Assessment Program (SWAP) Report for Shutesbury Elementary School

What is SWAP?

The Source Water Assessment Program (SWAP), established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

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Table 1: Public Water System (PWS) Information

<i>PWS Name</i>	Shutesbury Elementary School
<i>PWS Address</i>	West Pelham Road
<i>City/Town</i>	Shutesbury, Massachusetts
<i>PWS ID Number</i>	1272002
<i>Local Contact</i>	Mr. Walter Turati
<i>Phone Number</i>	413-259-1212

<i>Well Name</i>	<i>Source ID#</i>	<i>Zone I (in feet)</i>	<i>IWPA (in feet)</i>	<i>Source Susceptibility</i>
Well #1	1272002-02G	270	702	Moderate

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential contaminant sources, the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

Description of the Water System

The Shutesbury Elementary School (the school) is a rural, elementary school located on the west side of West Pelham Road in Shutesbury. The school student and staff population is approximately 275 people per day and is served by a single potable supply well (Well #2) located southwest of the school. The school is served by on-site septic disposal; all sewer components are located outside of the Zone I.

The well was approved through the Department's New Source Approval Process prior to renovation and expansion of the school in 1994 and has a Zone I protective radius of 270 feet and an Interim Wellhead Protection Area (IWPA) radius of 702 feet. Please

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

refer to the attached map that shows the Zone I and IWPA. The Zone I is the area immediately around the wellhead while the IWPA is a larger area that likely contributes water to the wellhead. The IWPA is only an interim protection area; the actual area of contribution to the wellhead may be larger or smaller. Well #1 (01G) is an emergency water supply that is physically disconnected from the potable water system and used as an irrigation well. That source is not addressed in this report.

The 200 foot deep, 6-inch diameter is located southwest of the school. Geological mapping in the area identifies the bedrock as the Dry Hill Gneiss, consisting of gneiss and quartzite. Based on topography and site observations, the overburden is assumed to be till; there is no evidence of a confining unit such as clay in the area. Wells drilled in these conditions are considered highly vulnerable to potential contamination from the ground surface because there is no significant hydrogeologic barrier, such as clay, to prevent surface contamination from migrating into the bedrock aquifer. The water does not require and is, at the time this report was prepared, not treated. You may request additional information regarding the quality of the water, from the local contact listed in Table 1.

Please refer to the following section, attached maps of the Zone Is and IWPAs and Table 2 for additional assessment information. Please note that the land use descriptions are limited and the school area is described as Urban Open space for lack of a better descriptor.

2. Discussion of Land Uses in the Protection Areas

During the assessment, very few land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Fuel oil storage;**
2. **Floor drains in boiler rooms;**
3. **School facilities and athletic fields; and**
4. **Residential housing.**

The Shutesbury Elementary School well is fairly well protected. There were no activities within the Zone I that pose a significant threat to the water supply. Although there are a few activities of concern within the IWPA, based on the topography, it

Table 2: Table of Activities within the Water Supply Protection Areas

Potential Sources of Contaminants	Zone I	IWPA	Threat	Comments
Underground Fuel Oil Storage	No	Yes	High	New tank w/containment
Floor Drains in Boiler Rooms	No	Yes	Moderate	Leachfield outside Zone I; consult with UIC program regarding compliance
Athletic fields	Yes	Yes	Moderate	Do not use pesticide/fertilizers on fields
School facilities and parking	No	Yes	Moderate	Limit road salt usage use BMPs for household hazardous materials. Monitor parking areas
Medium density residential housing	No	Yes	Moderate	Septic systems and household hazardous materials

-For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400-foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

appears those activities are primarily downgradient of the well. The overall ranking of susceptibility to contamination for the well is moderate. Please refer to Table 2.

1. Underground fuel oil storage tank (UST) – A double-walled steel, fuel oil UST is located within the IWPA of the water supply. If managed improperly, Underground Storage Tanks can be a potential source of contamination due to leaks or spills of the chemicals they store.

Recommendation:

- ✓ Any modifications to the UST must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code requirements. Consult with the local fire department for any additional local code requirements regarding USTs.

2. Floor Drains in Boiler Room – There is a day tank with adequate secondary containment in the boiler room. However, there are floor drains in the boiler room, that discharge to an unknown location. Title 5 prohibits disposal of any wastewater other than sanitary waste to a septic system and the UIC regulations prohibit dry wells in areas where hazardous materials or petroleum may enter the floor drain. The floor drain must be sealed, connected to a tight tank or sewer or protected to prevent boiler blow down, oil or other prohibited discharges through the floor drain. In the event of a failure of the float in the daytank or a leak in the oil feed lines, oil may enter the floor drains or the crack in the floor next to the small pressure tank for the "irrigation well".

Recommendations:

- ✓ Be sure that the floor drains are in compliance with Department Regulations (refer to Industrial Floor Drain Brochure attached) or sealed.
 - Contact the UIC coordinator for the Western Region Office of the Department (Rick Larson) at 413-755-2207.
- ✓ Install secondary containment for storage tank. Oil lines from the tank to the boiler should be sleeved so that any leaks would drain back to the tank or minimal oil would leak to the boiler room. We recommend that you establish a policy and plan for conducting maintenance operations on the boiler, especially when oil filters are changed. Require your boiler maintenance contractor to use containment, protect the drain and have absorbent materials on hand to prevent accidental leaks while conducting routine maintenance. The contractor should be responsible for the off-site disposal of any boiler blow down generated during maintenance.

- ✓ Seal all cracks in the floor and the floor drain if it cannot be adequately protected to prevent a prohibited discharge.

3. School facilities and athletic fields - Elementary schools generally use only household type hazardous materials for cleaning, pest control and lawn care. Part of the recreation field is within the IWPA of the well. Potential exists for contamination of the well by fertilizers, herbicides, and pesticides, all of which can be of concern.

Recommendations:

- ✓ Continue the use of Best Management Practices for all activities at the school and at the athletic fields. Consider drought resistant grasses and/or low release nutrient fertilizers in the IWPA, as required.
- ✓ Investigate Integrated Pest Management and Best Management Practices for field maintenance within the IWPA as necessary.
- ✓ Use secondary containment as necessary for any petroleum products kept for maintenance and lawn care equipment.
- ✓ Use Best Management Practices for handling treatment chemicals and vehicles used to access the area. Do not use or store pesticides, fertilizers or road salt within Zone I.

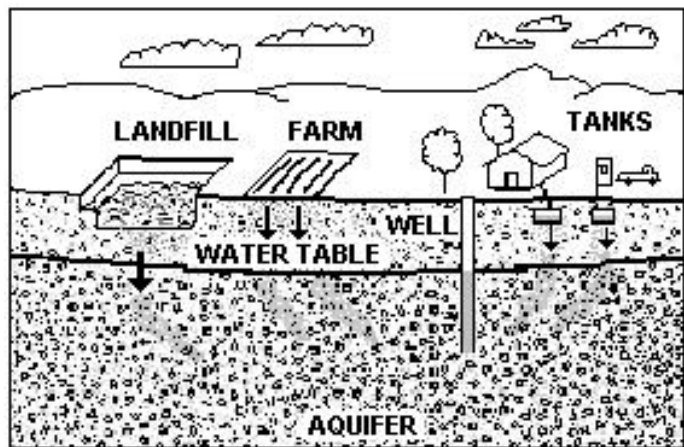


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Catherine V. Skiba in DEP's Springfield Regional Office at (413) 755-2119 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws/ including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been provided to the public water supplier, town boards, the town library and the local media.

- ✓ Prepare an emergency response plan for responding to an accidental release.
- ✓ Monitor roadside for spills and leaks.

4. Residential housing – Residential development in general, poses minimal threat to public and private water supplies provided there is proper management of household hazardous materials and maintenance of septic systems. Septic systems are located within the IWPA of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of household hazardous chemicals to septic systems is a potential source of contamination to the water supply.

Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include all teaching staff, custodial staff, groundskeepers, kitchen staff and certified operator.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems and supply this information to the Town to distribute to residents.
- ✓ Work with the town to promote household hazardous waste collection days.
- ✓ Avoid septic tank cleaners, especially those with acids and solvents.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will further reduce the well's susceptibility to contamination. Shutesbury Elementary School and the Town of Shutesbury are commended for the effort shown in siting the well and current protection efforts.

Please review and adopt the key recommendations listed above and as follows:

Zone I and IWPA:

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Conduct regular inspections of the Zone I.
- ✓ Monitor activities and if there is evidence of increased activity or access, consider gating the wellhead.
- ✓ Post drinking water supply signs in key location such as along the access road and in the parking area.
- ✓ Provide information to staff and pertinent school organizations about the potential hazards of household chemicals, lawn care chemicals and fertilizers.
- ✓ Use Best Management Practices (BMPs) for the use of petroleum products, lawn care products, pesticides and household hazardous waste.

Training and Education:

- ✓ Incorporate groundwater education into school curriculum (K-6 curricula available; contact DEP for copies).
- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator.

Facilities Management:

- ✓ Staff should be instructed on the proper disposal of spent household chemicals. Include custodial staff, groundskeepers, and certified operator. In order to participate in a Community Hazardous Waste Pick-up day, the school must be registered as a

Very Small Quantity Generator. The school is currently not registered as a generator of hazardous waste or waste oil. Review the enclosed document "A SUMMARY OF REQUIREMENTS FOR SMALL QUANTITY GENERATORS OF HAZARDOUS WASTE" and register to participate, if necessary.

Planning:

- ✓ Work with local officials to develop an Aquifer Protection District Bylaw that includes the school well's IWPA and to assist you in continued protection of the water supply.

- ✓ Have a plan to address short-term water shortages and long-term water demands. Keep the phone number of a bottled water company readily available.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a potential contaminant threat inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Grant Protection Program provides funds to assist public water suppliers in addressing Wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under the "Wellhead Protection Grant Program". For additional information, please refer to the attached program fact sheet. Please note that each program year, on or about May 1 the Department posts a new Request for Response (RFR), grant application form. Generally, the applications are due on or about June 30. Other funding opportunities are described in "Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation" at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

These recommendations are only part of your ongoing local drinking water source protection. Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Area
- Developing a Wellhead Protection Plan
- Recommended Source Protection Measures Fact Sheet
- Schools Fact Sheet
- Grant Program Fact Sheet
- UIC/Industrial Floor Drain
- Source Protection Sign
- Very Small Quantity Generator (VSQG) information